

gerly at age two or older with the ICD-9 procedural code for cleft lip repair. Additional characteristics examined across cohorts include length of stay and Consumer Price Index (CPI) adjusted charges. **RESULTS:** A total of 8,385 discharges for cleft lip repair were reported. In CL patients secondary surgery represented 16.3% (N=134), 14.2% (N=105), and 15.1% (N=129) of surgeries for 2003, 2006, and 2009, respectively. In CLP patients secondary surgery represented 25.7% (N=511), 25.2% (N=506), and 28.2% (N=555) for 2003, 2006, and 2009, respectively. From 2003-2009, mean length of stay and CPI-adjusted costs decreased in all cohorts except secondary surgery in CL patients. **CONCLUSIONS:** One fourth of all children required secondary surgery. The proportion of secondary cleft lip surgery did not differ significantly across years. Once adjusted, costs have decreased for the majority of patients, a finding in contrast to previously published studies.

#### PND60

##### THE EFFECT OF MEDICARE PART D ON MEDICATION PRESCRIBING PATTERNS AND DRUG UTILIZATION: THE CASE OF NON-BENZODIAZEPINE SEDATIVE HYPNOTICS

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**OBJECTIVES:** This study investigated the effect of Medicare Part D on prescribing patterns and drug utilization of non-benzodiazepine sedative hypnotics. **METHODS:** Time-series analyses were conducted using data from National Ambulatory Medical Care Survey (NAMCS). Subjects were derived from US outpatient visits between 2002 and 2009 where the primary payment source was Medicare and at least one non-benzodiazepine sedative hypnotic drug was prescribed. Data trends were graphically plotted and further analyzed using segmented regression to estimate the effects of the Medicare Part D on drug utilization. A weighted multivariate logistic regression was conducted to predict the maximum likelihood of prescribing pattern associated with patient and physician socioeconomic characteristics. All analyses utilized SAS PROC SURVEY applications to adjust for the complex sampling design employed by NAMCS database. **RESULTS:** An estimated 31.52 million of Medicare beneficiaries received at least one non-benzodiazepine prescription between 2002 and 2009 during their outpatient visits. After Medicare part D in 2006, there was a notable increase (24%) in Medicare outpatient visits between 2006 and 2009. In the same time period, prescribing of non-benzodiazepine sedatives increased significantly by 46.3%. The results from segmented regression indicate that the implementation of Medicare Part D drug benefits has significantly increased the sedative utilization in Medicare population ( $P=0.0001$ ). Multivariate logistic regression revealed that patient gender, geography, chronic condition, and physician specialty all play an important role in determining the utilization pattern of non-benzodiazepine sedatives. **CONCLUSIONS:** Our study indicated that the use of non-benzodiazepine hypnotics increased dramatically after Medicare Part D. Increased utilization may also be related to the switching effect from benzodiazepine formulary exclusion and/or antidepressant off-label use for insomnia pharmacotherapy. These findings show the importance of using data analysis to identify substantial consequences from policy implementation and the need to provide additional guidance to insurers on how to effectively monitor prescribing patterns.

#### PND61

##### ANALYSIS OF THE BURDEN OF 30-DAY READMISSIONS AMONG PATIENTS WITH EPILEPSY: A RETROSPECTIVE STUDY IN A COMMERCIALY-INSURED UNITED STATES POPULATION

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**OBJECTIVES:** To evaluate the burden of 30-day readmissions in adjunctively-treated patients with epilepsy. **METHODS:** The MarketScan<sup>®</sup> retrospective database (Jan-2006 to Dec-2011) was used. Selected patients had:  $\geq 1$  diagnosis code for epilepsy (ICD-9 345.xx), age  $\geq 18$ ,  $\geq 1$  hospitalization (index), and received adjunctive AEDs during study period. Eligible patients had 60 days pre- and  $\geq 365$  days post-index continuous enrolment. Patients were stratified by type of hospitalization (all-cause or epilepsy-related) and by partial vs. generalized epilepsy diagnosis. Readmissions were defined as any hospitalization occurring  $< 30$  days from the preceding hospitalization's discharge date. **RESULTS:** Of a total of 504,507 patients, 141,017 (19%; age  $51 \pm 17.6$ ; 59% female, average follow-up 1,188 days) had  $\geq 1$  all-cause hospitalizations, and of these, 91,587 (65%) had an epilepsy-related admission, and 41,453 (29%) had  $\geq 1$  all-cause 30-day readmissions. Forty-six percent of patients (8,955) had epilepsy-related readmissions. Among patients with epilepsy-related hospitalizations, 19,115 (21%) had  $\geq 1$  all-cause 30-day readmissions, 61% of whom (11,670) had epilepsy-related readmissions. Partial epilepsy accounted for 9,882 (7%) of the total number of patients hospitalized (all-cause) during the study period; 100% of these patients had one or more epilepsy-related admissions. Among the hospitalized (all-cause) with POS, 1,729 (18%) had  $\geq 1$  all-cause readmissions, and of these 1,140 (66%) had  $\geq 1$  epilepsy-related readmissions. Among POS patients with epilepsy-related hospitalizations, 1,502 (15%) had  $\geq 1$  all-cause readmissions, and of these 1,055 (70%) had  $\geq 1$  epilepsy-related readmissions. **CONCLUSIONS:** In this study, approximately one in three patients with epilepsy hospitalized for any reason had a 30-day readmission, with approximately half of these patients presenting 30-day readmissions due to epilepsy. Approximately 60% of patients with an epilepsy-related admission had a 30-day readmission due to epilepsy. Patients with partial epilepsy had a greater burden of epilepsy-related hospitalizations and readmissions.

#### PND62

##### NATIONAL ESTIMATES OF PRIMARY AND SECONDARY CLEFT PALATE SURGERY: RESULTS FROM THE KIDS' INPATIENT DATABASE

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**OBJECTIVES:** Children with cleft palate (CP) or cleft lip and palate (CLP) may require multiple surgeries to improve their appearance and function. The objective of this

study was to estimate the proportion of cleft palate surgeries identified as secondary (or revision) in patients with a diagnosis of cleft palate only or cleft lip and palate. Additional objectives included identification and analysis of patient and hospital level characteristics. **METHODS:** The Kids' Inpatient Database (KID), a nationally representative sample of pediatric inpatient visits, was used for this study. Years analyzed included 2003, 2006, and 2009. Subjects were identified by International Classification of Diseases Ninth Revision (ICD-9) diagnosis of cleft palate only or cleft lip and palate. Primary surgery was defined as a surgery before three years of age with the ICD-9 procedural code 'Correction Cleft Palate.' Secondary surgery was defined as a surgery at age three or older with any of the following ICD-9 procedural codes: 'Correction Cleft Palate,' 'Revision Cleft Palate Repair,' 'Closure Fistula Mouth,' or 'Plastic Repair Palate.' Hospital, patient, and clinical characteristics were also examined across cohorts. All costs were adjusted to 2009 dollars using the Consumer Price Index (CPI). **RESULTS:** For the three years combined, 15,861 discharges for cleft palate repair were reported: 7,856 for CP only patients and 8,055 for CLP patients. Secondary surgery accounted for 28.1% (N=2,193) of palate repairs performed in children with CP only, compared to 43.5% (N=3,505) of palate repairs in children with CLP. Secondary surgery rates did not differ significantly across years. From 2003-2009, CPI-adjusted costs decreased in all cohorts except secondary surgery in CP only patients. **CONCLUSIONS:** Secondary surgeries represent a significant portion of cleft palate repairs performed in the United States. Children with cleft palate only have fewer secondary surgeries compared to those with cleft lip and palate.

#### PND63

##### PRIOR DISEASE-MODIFYING DRUG USE AMONG PATIENTS WITH MULTIPLE SCLEROSIS

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**OBJECTIVES:** To evaluate prior disease-modifying drug (DMD) use among currently treated and currently untreated multiple sclerosis (MS) patients. **METHODS:** A random sample of MS patients (age  $> 18$  years) from the National Health and Wellness Survey or Lightspeed Research panel completed an internet survey in November/December 2012. The survey contained questions related to demographics, disease characteristics, and current and prior DMD use. The number and percentage of patients reporting prior DMD use by current therapy groups (self-injectable DMDs, infusion DMDs, oral DMDs, and not currently on DMD) is described. **RESULTS:** There were 969 patients who completed the survey. Average age was 48.8 years (SD 11.3), 82.9% were female and 737 (76.1%) were currently receiving DMD treatment [self-injectable: 576 (78.2%); infusion: 84 (11.4%); oral: 77 (10.4%)] while 232 (23.9%) were currently untreated. Among patients currently treated with a self-injectable DMD, most patients were either on their first treatment (57.7%) or had prior use of 1 DMD (27.4%). For those currently treated with an infusion DMD, 42.9% had prior use of 1 DMD, 36.9% had prior use of 2 DMDs, and 17.9% had prior use of  $\geq 3$  DMDs. For patients currently treated with an oral DMD, 27.3% had prior use of 1 DMD, 32.5% had prior use of 2 DMDs, 32.5% had prior use of  $\geq 3$  DMDs, and 7.8% were initially treated with an oral DMD. For those not currently on a DMD, 34.9% were untreated, while 33.2%, 18.5%, and 13.4% had prior use of 1, 2, or  $\geq 3$  DMDs, respectively. **CONCLUSIONS:** In this sample of MS patients, 8.4% had never been treated with a DMD. Most patients initiated therapy with a self-injectable DMD, while patients currently treated with infusion and oral DMDs had prior use of 1 or more DMDs.

#### RESEARCH POSTER PRESENTATIONS - SESSION II

##### DISEASE-SPECIFIC STUDIES

##### CANCER – Clinical Outcomes Studies

#### PCN1

##### META-ANALYSIS OF ANASTOMOTIC LEAK RATES FOLLOWING HAND-SEWN SUTURE VERSUS STAPLED ANASTOMOSES DURING RIGHT COLON SURGERY

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**OBJECTIVES:** Ileocolic anastomoses are commonly performed for right-sided colon cancer and Crohn's disease. Anastomotic leak complications are a significant source of patient morbidity and mortality and have a major impact on health care costs. The objective of this analysis was to compare anastomotic leak rates following ileocolic anastomoses performed using mechanical stapling and hand-sewn suture techniques. **METHODS:** Pubmed, Embase, Cochrane Library and trial registries were searched for randomized controlled trials comparing hand-sewn and stapled ileocolic anastomoses published between 1990 and December 2013. The odds ratio (OR) for overall anastomotic leak rate was calculated and then weighted and pooled in a meta-analysis with Mantel-Haenszel fixed-effect modeling with Chi square test for heterogeneity. **RESULTS:** Eight studies with a total of 1,172 patients were included. Two studies were from Germany, 2 from Scotland, 1 from France, 1 from Japan, 1 from US and 1 was a global study with patients from US, UK and Canada. The median and average sample sizes across studies were 112 and 149 patients, respectively. Three studies were for Crohn's disease, 3 were for colorectal cancer and 2 were for other diagnoses. There were 11 (2.31%) anastomotic leaks reported in 457 patients in the mechanically stapled group, and 44 (6.15%) leaks in 715 patients in the hand-sewn (sutures) group. At study level, the median leak rates in stapled and hand-sewn groups were 0.40% and 3.95%, respectively. Overall, the odds of anastomotic leaks were reduced to less than half with mechanical stapling compared to hand sewn techniques (pooled OR = 0.46; 95% CI = 0.24 to 0.89;  $p = 0.02$ ). **CONCLUSIONS:** This meta-analysis of randomized controlled trials comparing hand-sewn with stapled ileocolic anastomoses demonstrates a significantly lower rate of anastomotic leak-

age with mechanical stapling – which has potential to improve patient outcomes, lower re-operation rates and lower costs.

# PCN2

## A META-ANALYSIS OF RANDOMIZED CLINICAL TRIALS (RCTS) ON EPIDERMAL GROWTH FACTOR RECEPTOR -TYROSINE KINASE INHIBITORS (EGFR-TKIS) FOR ADVANCED NON-SMALL CELL LUNG CANCER (NSCLC)

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**OBJECTIVES:** Lung cancer is the first cause of cancer death in both men and women worldwide and 85% are NSCLC. As a targeted therapy for NSCLC, EGFR-TKIs has been compared with traditional chemotherapy in various trials in different countries but there is a lack of comprehensive literature review of these RCTs especially from Health-Related Quality of Life (HRQoL) perspective. We compared the efficacy, safety and HRQoL between EGFR-TKIs (gefitinib, erlotinib and afatinib) and chemotherapy for advanced NSCLC patients with largest magnitude. **METHODS:** Two authors independently searched published RCTs comparing EGFR-TKIs vs chemotherapy for advanced NSCLC between Jan 1, 1966 and July 31, 2013 in PubMed, Cochrane Library, EMBASE, the conference proceedings of ASCO and ESMO. We conducted meta-analysis by Revman 5.0 using either random or fixed effects inverse variance weighted method, determined by heterogeneity levels. **RESULTS:** Twenty-two eligible studies and 6728 patients were included. Comparing to chemotherapy, EGFR-TKIs were superior in objective response rate (OR=1.90, 95% CI=1.32-2.57, P<0.00001) and progression free survival (HR=0.78, 95% CI=0.66-0.91, P<0.00001). However, no significant differences were observed on disease control rate (OR: 1.24; 95% CI=0.89-1.73), median overall survival (HR=1.00; 95% CI=0.93-1.07) and 1-yr survival rate (OR=0.96; 95% CI=0.82-1.13). EGFR-TKIs demonstrated less adverse events in neutropenia (OR=0.01, 95% CI=0.01-0.02), anemia (OR=0.2, 95% CI=0.14-0.31), fatigue (OR=0.18, 95% CI=0.12-0.29) and nausea (OR=0.35, 95% CI=0.21-0.60) and less grade 3 or 4 adverse events (OR=0.29, 95% CI=0.26-0.33). However, chemotherapy had less rash (OR=7.18, 95% CI=4.67-11.05) and diarrhea (OR=2.10, 95% CI=1.49-2.98). In 8 studies evaluating the HRQoL, EGFR-TKIs had shown better outcomes than chemotherapy according to the three HRQoL instruments: Functional Assessment of Cancer Therapy-Lung (OR=1.62, 95% CI=1.38-1.91), Trial Outcome Index (OR=1.93, 95% CI=1.61-2.33), and Lung Cancer Subscale (OR=1.19, 95% CI=1.01-1.39). **CONCLUSIONS:** Though no obvious survival benefit was observed, EGFR-TKIs demonstrated significantly better safety and HRQoL outcomes than chemotherapy.

# PCN3

## THE IMPACT OF PRE-EXISTING CHRONIC CONDITIONS ON CANCER DIAGNOSIS, RECEIPT OF TREATMENT AND SURVIVAL AMONG MEDICARE BENEFICIARIES WITH COLORECTAL CANCER IN A RURAL POPULATION

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**OBJECTIVES:** To determine the comorbidity burden and the association of specific pre-existing chronic-conditions with colorectal cancer (CRC) stage-at-diagnosis, treatment, and survival among elderly Medicare beneficiaries from a rural population. **METHODS:** This population-based retrospective cohort study used data on fee-for-service Medicare beneficiaries diagnosed with CRC and chronic-conditions between 2003-2006, identified from the West Virginia Cancer Registry (WVCR)-Medicare linked database (n=2,119). Beneficiaries were classified in specific chronic-condition clusters. CRC-treatment received was ascertained from beneficiaries' Medicare claims by following them for 12-months from their CRC-diagnosis date or until death. Receipt of minimally-appropriate CRC treatment (MACT) as defined by National Cancer Institute CRC-treatment guidelines and receipt of CRC-related surgery, chemotherapy, and radiation were examined. All-cause and CRC-specific mortality in the 36-month period following the CRC-diagnosis were examined, after accounting for selection bias using inverse probability treatment weights and adjusting for socio-demographics, cancer site and stage-at-diagnosis, receipt of MACT, and pre-existing conditions. **RESULTS:** The WVCR-Medicare linked database had a higher proportion of beneficiaries as compared to those from national data across almost all the condition clusters including previous-malignancy, COPD, depression, gastrointestinal conditions, heart-conditions, hypertension, liver-conditions, and renal-conditions. Beneficiaries from the WVCR-Medicare linked database with most chronic-conditions were generally not likely to be diagnosed at distant-stage CRC, and possibly not as less aggressively treated for CRC as reported by some other studies. Only a few conditions were negatively associated with CRC-specific mortality including depression (adjusted hazards ratio (AHR)=1.25; 95% CI=[1.08, 1.46]), and liver-conditions (AHR=1.38; 95% CI=[1.19, 1.60]). However, almost all chronic-conditions were negatively associated with all-cause mortality in this study. **CONCLUSIONS:** This study highlights the need to focus on cancer-care that is better integrated with co-management of chronic-conditions, especially among those from rural-areas who are likely to have a high comorbidity burden.

# PCN4

## GEOGRAPHICALLY-WEIGHTED REGRESSION ANALYSIS OF LATE-STAGE PROSTATE CANCER INCIDENCE IN FLORIDA

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**OBJECTIVES:** To account for the non-stationarity of relationships in space, aspatial regression can be supplemented with geographically-weighted regression (GWR), whereby the regression model is fitted within local windows and each observation is weighted according to its proximity to the center of the window. This study aims to conduct regression analysis in a spatial context to assess the local impacts of putative factors on late-stage diagnosis of prostate cancer in Florida during the

period 2001-2007. **METHODS:** A logistic regression was performed aspatially and at the nodes of a 5 km spacing grid overlaid over Florida and using all the cancer cases within a radius of 125 km of each node. Each observation was weighted as a function of its proximity to the center of the window (bivariate adaptive weight function). Covariates included age, race, marital status, smoking, type of health insurance and diagnosis facilities, presence of comorbidities (healthy (no comorbidity), average (1-2 comorbidities), above-average), census-tract median income and presence of farmhouse, year of diagnosis, county-level provider-to-case ratios. **RESULTS:** Variables increasing the likelihood of late-stage diagnosis included having 1 to 2 comorbidities (odds=1.697) and more than 2 comorbidities (odds=3.963), smoking (odds=1.283), being African American (odds=1.199) and living in census tracts with farmhouses (odds=1.124). Having private insurance (odds=0.533), having public insurance (odds=0.470), being married (odds=0.787) or diagnosed in a for-profit facility (odds=0.886), as well as living in census tracts with high income (odds=0.994) reduces the likelihood. **CONCLUSIONS:** There are significant spatial associations between late-stage prostate cancer incidence and observed individual, socioeconomic, behavioral, environmental and demographic factors in Florida. This emphasizes the need for local strategies and cancer control interventions to reduce the percentage of late-stage diagnosis and ultimately eliminate health disparities.

# PCN5

## TEMPORAL AND GEOGRAPHIC VARIATIONS OF PROSTATE CANCER INCIDENCE AND MORTALITY IN FLORIDA

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**OBJECTIVES:** Differences in cancer incidence and mortality are apparent among various demographic groups. Understanding the underlying determinants that place certain population subgroups at higher incidence and/or mortality of prostate cancer is imperative. Analyzing temporal trends can provide a comprehensive picture of the burden of the disease and generate new insights about the impact of various interventions. This study aims to use advanced geospatial and temporal statistical techniques to model temporal trends in prostate cancer incidence and mortality and their geographical variations across Florida. **METHODS:** Annual census-tract level rates were computed over the period 1981-2007 for two races (white and black), two categories of age (40-65, >65) and five classes of incomes. They were then smoothed using binomial kriging to filter the noise caused by small population sizes. Joinpoint regression and new disparity statistics were applied to analyze temporal trends and detect potential racial and socio-economic differences. **RESULTS:** Bivariate analysis of time-series indicated that late-stage diagnosis was generally more prevalent among blacks compared to whites, for age category 40-64 compared to older patients who are covered by Medicare, and among classes of lower socio-economic status. Joinpoint regression showed that the rate of decline in late-stage diagnosis for the two racial groups was similar among older patients (i.e. parallel time series). Both races displayed distinct spatial patterns with higher rates of late-stage diagnosis in the Florida Panhandle for white males whereas high rates clustered in South-eastern Florida for black males. **CONCLUSIONS:** The observed impact of socioeconomic and demographic factors on temporal trends in health outcomes emphasizes the need for local strategies and cancer control interventions to reduce late-stage diagnosis and improve health outcomes. Furthermore, large variations in the temporal trends in prostate cancer incidence and mortality and geographical variations would have important implications for resource allocation.

# PCN6

## OBESITY & CANCER ARE INDEPENDENTLY ASSOCIATED WITH INCREASED COMORBID RISK IN DISTINCT 2013 DATA SOURCES: CLALIT ISRAEL EMR & UNITED STATES NATIONAL HEALTH AND WELLNESS SURVEY (NHWS)

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**OBJECTIVES:** Increased comorbid/mortality risk accompanies both excess weight and cancer. Charlson comorbidity index (CCI) scores in obesity and cancer were examined across two distinct populations and study designs. **METHODS:** Comprehensive, electronic medical record (EMR) 2013 data from Clalit, a payer-provider, closed-system health fund covering 55% of the Israeli population, were used to assess cancer diagnosis (vs. no cancer) and obesity (BMI ≥ 30 vs. less) among individuals aged 21+ in Israel (n=2,552,720). Similarly examined were 2013 adult (21+) respondents in the U.S. NHWS (n=71,118), a cross-sectional, self-reported online survey. CCI, a weighted sum of comorbidities predicting mortality risk, was calculated based on registry diagnostic codes (Clalit) or self-reported diagnosis (NHWS). CCI categories and mean scores were compared across obesity/cancer groups and within age strata. **RESULTS:** Proportions or patterns of individuals with CCI=1+ were comparable across age brackets (21-49, 50-64, 65+) in Clalit (10.5%, 43.3%, 66.7%, respectively) and NHWS (14.1%, 33.1%, 44.3%). CCI was higher among those with vs. without cancer (or obese vs. non-obese), all p<0.05, among both Israeli (Clalit) and U.S. (NHWS) individuals. Across non-obesity/non-cancer, obesity/non-cancer, non-obesity/cancer, and obesity/cancer groups, significantly increasing proportions of individuals had CCI=1+ in both Clalit (23.4%, 41.9%, 68.7%, 77.2%, respectively) and NHWS (16.7%, 31.3%, 56.5%, 70.0%), plus increasing CCI means in Clalit (0.40, 0.80, 1.80, 2.10) and NHWS (0.25, 0.45, 1.38, 1.73), all p<0.05. These patterns replicated within the different age brackets. **CONCLUSIONS:** Across distinct data sources (Israeli insurance-clinical EMR and U.S. online survey), comparable comorbidity rates emerged within corresponding age brackets (notwithstanding "healthy cohort" effects observed among NHWS respondents aged 65+), and similar patterns of increased risk emerged with both cancer and obesity. This underscores the global challenge posed by the "dual-risk" profile of obesity with cancer history. Moreover, comprehensive and integrated EMR data can produce convergent results with validated, self-reported data, across diverse geographies.